

Appl. No. 09/913320
Amdt. dated July 18, 2003
Reply to Office Action of March 19, 2003

Remarks/Arguments:

At interview January 14, 2003 Mr.
This follows an interview with Examiner Manoharan on July 16. The courtesy of the interview was greatly appreciated. The drawing discussed during the interview is attached to this amendment. The examiner's Interview Summary correctly reflects the examiner's position that a question of obviousness remains.

In the office action of March 19, 2003, the examiner rejected claims 13 - 16 and 23 - 24 as obvious over any of Kowarski, Kuhn et al. or Holland. Claims 17 - 22 were objected to as being based on a rejected base claim, but were indicated to contain allowable matter.

While the indication of allowability was appreciated, we believe that the broader claims also are not obvious from the prior art, for reasons set out below. Claims 13 and 14 have been amended to recite elements positively and to improve definiteness and clarity.

The object of the present invention is to avoid a cross contamination of samples during evaporation, especially if the samples contain different solvents. This is achieved by isolating the containers from one another, or from neighboring groups of containers, by connecting the containers, or groups of them, directly to a vacuum source without having a common head space. The difference is clearly shown on the attached sketch.

Kuhn et al. describes a vortex evaporator comprising a chamber including a holder for holding at least one container, drive means coupled with the holder, vacuum means for drawing vacuum within the chamber and heater means inside the chamber for heating the holder.

Kuhn et al. further discloses an alternative embodiment where "a vacuum, heat

and vortex can be selectively activated and controlled to evaporate solutions within a multiplicity of containers (column 12, line 58 to 61)". The factors of vortex, heat and vacuum can be selected by the user, either alone or in combination. The disclosure in column 12 has to be read in the context of the description of Figures 5 to 10 and especially Figure 8 (column 11, line 30). A skilled person would recognize that the whole chamber 14 including the heating means and the vortex means is connected to a vacuum source. All containers are contained within one chamber and the chamber itself is connected to the vacuum source. This solves a proposed object of Kuhn et al.: to provide a device which enables a faster evaporation of the liquid and has improved evaporation control (col. 2, lines 21 to 24).

It would have been not obvious to a skilled person from Kuhn et al. to connect the filling openings of the sample vessels, individually or groupwise, to a means for producing a vacuum.

Actually, Kuhn et al. directs one away from the present invention. That patent teaches that "the containers 12 and container holder 322 are coupled to move with the housing 200" (column 7, lines 48 to 49) and that "... Heater 22 remains stationary within the chamber 14 as container holder 322 moves in an orbital motion. The heater 22 underlies container holder 322 and transfers heat to the container holder 322 and thus to the container 12" (column 8, lines 24 to 29). "Vacuum is supplied to the chamber 14 by tube 386" (column 11, lines 32 to 34).

Kuhn et al. is silent about a situation when samples having different dilutions or different solvents are present within the device. The skilled person would assume from the teaching of Kuhn et al. that all samples must contain identical compositions.

Therefore, as a first inventive step a skilled person has to recognize that he has to modify the device according to Kuhn et al. in order to avoid the problem underlying the present invention (avoiding cross contamination during evaporation). The skilled

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person needs further inventive activity to come to the particular solution presently claimed.

Kuhn et al. does not suggest providing means which are connectable to the filling opening of a sample vessel and to a means for producing a vacuum. The connecting means according to Kuhn et al. is one chamber in which the plurality of vessels is placed beside other means.

Claim 13 is therefor considered as being non-obvious over Kuhn et al.

The Kowarski patent describes an apparatus for separating liquids comprising an enclosure means, support means with insert enclosure means for supporting at least one discrete portion of said liquids, pump means for evacuating liquid matter from within the enclosure means and port means for restrictively controlling the evacuation.

Kowarski's apparatus includes an enclosure 36 which is placed on a tube support 16 having a gasket 32 placed in between. The arrangement of tube support 16, gasket 32 and enclosure 36 is called the upper body 13. The tube support 16 is capable of carrying a multiplicity of test tubes 18. According to Figure 3, the tube support 16 contains an opening 74 which is used for applying vacuum. All test tubes evaporate within a space confined by enclosure 36 and tube support 16.

We respectfully submit that applicant's claim 13 would not have been obvious from Kowarski, at the time the invention was made.

Kowarski leads the skilled person in a different, if not opposite, direction than the solution of the present invention. The disclosure at column 4, lines 8 to 13 clearly states that the cover 36, being part of upper body 13, is evacuated, meaning that the whole upper body 13 as one part is evacuated. The skilled person would have recognized that the sample tubes evaporate into the space confined by the tube support 16 and the enclosure 36 prior to the removal of the solvent vapor and a mixing of the

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different solvents may easily happen.

As already discussed vis-a-vis Kuhn et al., the skilled person would have had first to perform a first inventive activity by realizing that the problem of cross contamination still occurs in a device of Kowarski. And even after having done that, since Kowarski does not provide any suggestion for solving the problem by other means, connecting the filling openings of the sample vessels either individually or groupwise by a connection means to the means for producing a vacuum would have been a non-obvious development.

U.S. Patent 3847200, identified as Holland, discloses a device which includes a holder (19 to 21 and 23), and a lower chamber 27 capable of being evacuated by fitting 32. The lower chamber 27 is placed onto block 14 and hermetically sealed.

The disclosure is similar to those described above in that there is one common chamber which covers all test tubes 22 and the one common space above the fillings openings of the test tubes 22 is evacuated by a vacuum means 11.

The solution as proposed by the present invention to connect the filling openings of the sample vessels individually or groupwise with the help of a connecting means to the vacuum source is also not obvious from Patent 3847200. The reasoning presented above for Kuhn et al. and Kowarski applies to Patent 3847200 as well.

The enclosed schematic drawings illustrate the differences between the cited prior art and the present invention.

Even where vacuum, temperature or vortex speed can be changed by the user, the prior art documents only suggest evacuating the whole space over the complete arrangement of the sample holder.

At the interview, the examiner pointed out that Kuhn supplies inert gas through

individual channels in an alternative embodiment. After studying Kuhn further, we note that while there may be plural channels, they appear to supply gas to a common chamber and therefore do not achieve the isolation of individual sample containers which is achieved by the present invention.

We therefore believe that the subject matter of claim 13 is inventive over Kuhn et al., Kowarski or Patent 3847200, whether taken individually or in combination. Claims 14, 15 and 16 are further deemed allowable for the additional limitations they recite.

Respectfully,



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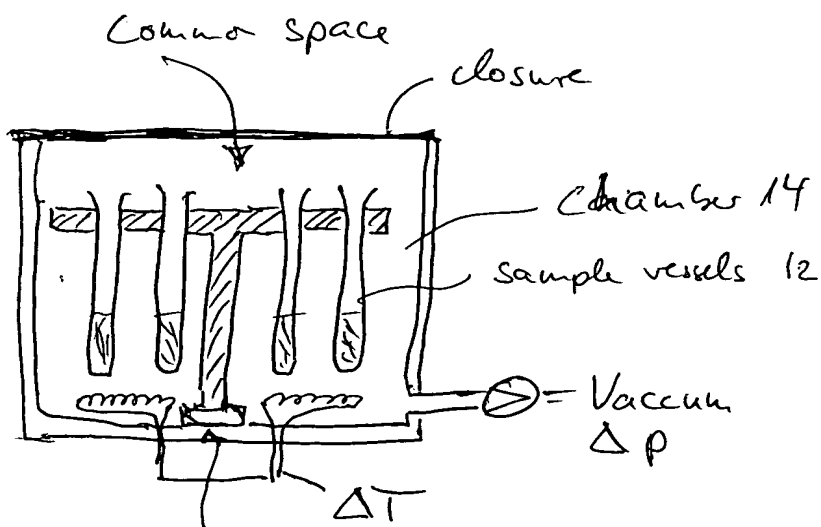
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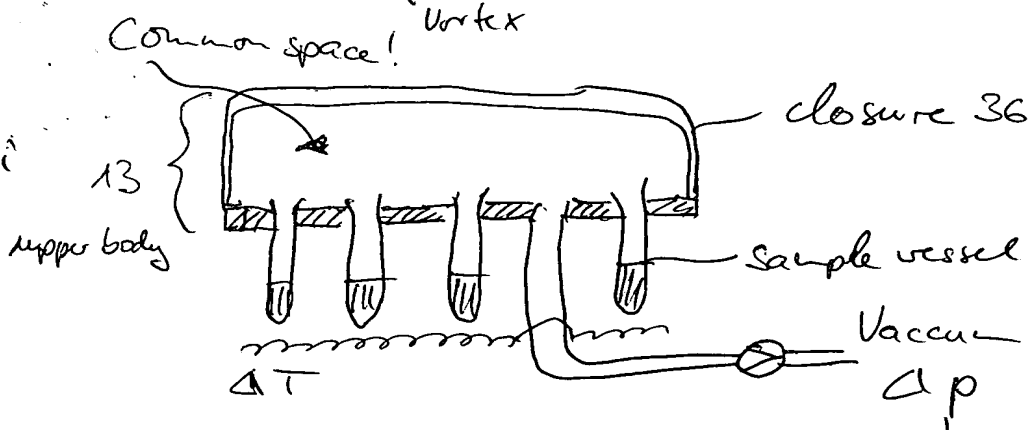
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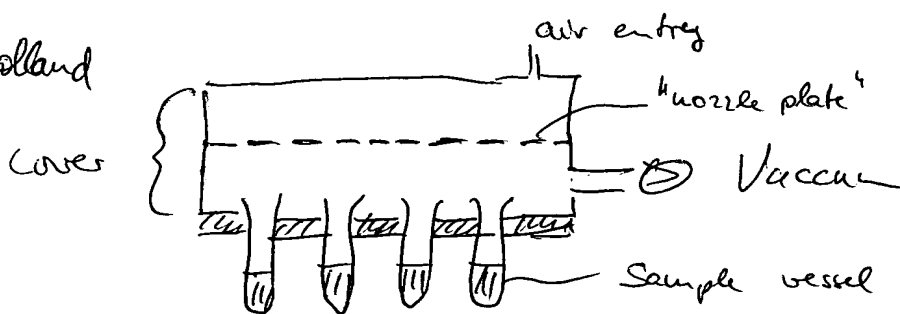
ΔT , Δp , vortex speed
can be varied
independently
or combined



Kowarski



Kopp & Holland



Invention acc. application

- individually
or
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